

PI: S. Pravdo (382) Co-Is: S. Shaklan (383), D. Redding (383), G. Serabyn,(32), A. Boss (CIW), A. Burrows (UA), B. Dorland (USNO), D. Kirkpatrick (CIT)

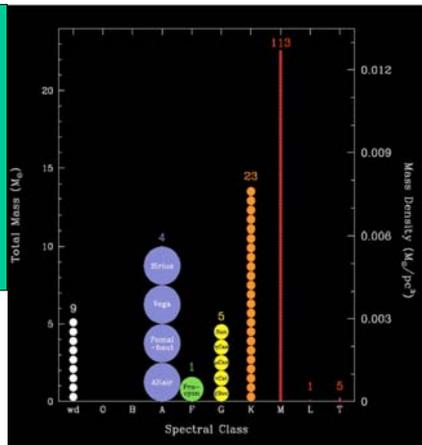
## Project Objective

To find “Jupiters” around low-mass stars—the M and Brown Dwarfs—and measure their masses and orbits. These discoveries will extend the census of planets to the majority of all stars and test the theories of planet formation. Observations are in the Near Infrared where the light from low mass stars is most intense.

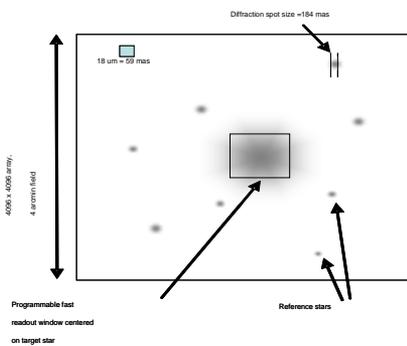
## Recent Results

GIMLI is based upon the ground-based STEPS project (see companion poster by S. Shaklan), a Coronagraphic concept being developed for use at Palomar Observatory (G. Serabyn), and an active primary mirror developed at JPL to improve reliability and lower costs (D. Redding). The GIMLI concept was described in a NASA Exoplanet Task Force White Paper and was proposed to NASA as an Astrophysics Strategic Mission Concept.

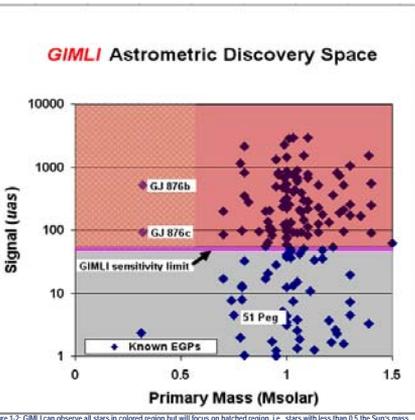
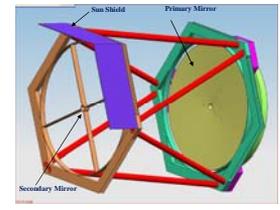
70% of stars are low mass M dwarfs as illustrated by their numbers (red symbols) compared with other stars (other colors) within 8 parsecs and above 30° south.



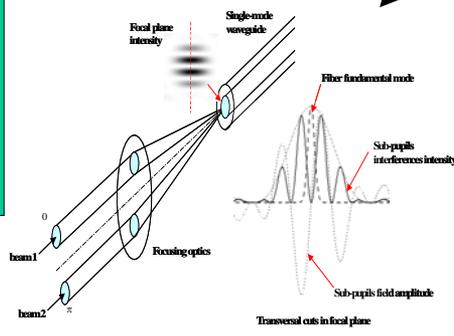
## Project Description



The GIMLI telescope sends infrared light to the Astrometric Instrument that measures the wobble of the star and the mass of the planet.



Exoplanets found to date rarely (only 2) appear in the region of discovery space (upper left orange-shaded region) that GIMLI will sensitively explore.



The GIMLI telescope also sends infrared light to the Coronagraphic Instrument that makes an image of the planet to measure the luminosity.

## Benefits to NASA and JPL

GIMLI is proposed as a Astrophysics Strategic Mission Concept study. This study describes an intermediate cost mission to inventory planets around the class of low-mass stars, 70% of all stars. Our knowledge of planetary systems around these stars is limited by current-day planet-finding techniques. By testing planetary formation theory, in particular the very different predictions of the core accretion and disk instability models, GIMLI will delve into our own origins.

## Publications

The concept behind GIMLI is described in the NASA Exoplanet Task Force White Paper, located on the web at: [http://exoplanets.jpl.nasa.gov/documents/Exoplanetnasawhitepaper\\_final1-pravdo.pdf](http://exoplanets.jpl.nasa.gov/documents/Exoplanetnasawhitepaper_final1-pravdo.pdf)